

FURTHER NOTES ON MALAYSIAN OSMANTHUS

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Since the publication of a recent revision of *Osmanthus* (Green in Notes R.B.G. Edinb. xxii, 439: 1958) several specimens from Malaya and Sumatra have come to hand which considerably modify the concept of the species represented in that area.

Even whilst the manuscript of the revision was passing through the press it became apparent that Ridley's *Olea capitellata* is really an *Osmanthus*, but there was insufficient time to reconsider the species described in the revision in the light of this discovery. Shortly after this Dr. C. G. G. J. van Steenis very kindly sent on loan specimens of two gatherings he had made in Sumatra in 1937. They proved to be very similar to, yet slightly different from, the type of *O. sumatranus*. Lastly, I came across two sheets, the type and one other, of *Ilex nitens* Ridl., which also proves to be *Osmanthus*.

In this way some dozen additional gatherings of *Osmanthus* have now to be taken into account, and it becomes apparent that there is only one variable species in Malaysia, differing slightly from gathering to gathering according to the locality and its altitude. Furthermore, a recent personal discussion with Dr. van Steenis has drawn my attention to the affinity of the mountain floras of Sumatra and the Malay Peninsula, and to the dangers in Malaysian taxonomy which arise from phenotypic variation caused by differences in altitude. Within the material now examined from these areas there is great variability in leaf size. The smallest leaves are those from the highest mountains: the Sumatran specimens and Haniff & Nur 7919 from Gunong Tahan in Malaya at 1650–2150 m. Conversely the largest leaves are present on the material from lower elevations, Moysey & Kiah 31834 from Gunong Padang at 1100 m. Similarly the specimens from Gunong Tahan possess the thickest and most coriaceous leaves and the densest, if still minute, indumentum. This type of variability has been emphasised in one of the general essays published in the Flora Malesiana (van Steenis, Fl. Mal. I, v (3), clxxx-clxxxi: 1955) yet the variation is not quite so straight forward in all the material examined. The leaves with the thinnest texture do come from lower altitudes, but the type and other similar material of *O. scortechinii* have thick leaves despite the fact that they come from mountains somewhat intermediate in height. Likewise the gatherings from Sumatra, whilst from the highest localities of all, are not the thickest in leaf texture. Were it possible consistently to correlate leaf size, texture and indumentum with geographical distribution, it might have been possible to recognize infraspecific divisions within the complex, but it is felt to be wisest not to attempt this in view of our present limited knowledge of the species, for even with the additional specimens mentioned above relatively little is as yet known of *Osmanthus* in Malaysia: its distribution, range of variability, frequency and ecology. Until more is known it seems best at this stage to treat all the collections that have so far been made as one species, for which the earliest name is *Osmanthus scortechinii* King & Gamble.

Within the genus as a whole *O. scortechinii* stands very near to *O. marginatus* from S.E. China, the Ryukyu Islands and Formosa. Flower structure is remarkably constant throughout the section, but in addition to possessing hermaphrodite flowers *O. scortechinii* has a larger calyx than any other species. The endocarp of *O. marginatus* is generally hard and about 1 mm. thick, and even when thinner than this is never so thin and crustaceous as in *O. scortechinii*. The inflorescence of *O. marginatus* is generally less compact and with more flowers, the upper inflorescence bracts are more or less linear and the axis much stouter in fruit. Vegetatively the two species are very similar, both showing considerable variation throughout their range, however, *O. marginatus* is consistently glabrous.

The species lies well within Sect. *Leiolea* with which it agrees in inflorescence shape and flower structure. Most of the species in the genus consistently possess only two stamens, but four are not unknown in the family, and are to be found in occasional species of *Linociera*, *Forestiera* and *Nestegis*. The small rounded anthers are also characteristic of Sect. *Leiolea*, but a distinct, though very small, terminal appendage is to be seen on *van Steenis* 9033, which is reminiscent of the structure found on the larger anthers of Sect. *Osmanthus* and of most related genera.

The discovery that *Ilex nitens* is really an *Osmanthus* opened up an interesting enquiry. At first it was suspected that it was the only opposite-leaved species of *Ilex* to have been described. However, Merrill (Journ. Arn. Arb. xx, 222: 1939) described *Ilex oppositifolia* and *I. zygophylla* both from Mount Kinabalu in N. Borneo, and they appear to be genuine *Ilex* despite their opposite leaves. The flowers in *O. scortechinii* are hermaphrodite, but in *I. oppositifolia* and *I. zygophylla* they are unisexual and examination of the ovary of *Clemens* 31375 and 31108 of the former species, the only specimens available with female flowers, reveals up to seven cells in the ovary, a condition never present in the Oleaceae. An elementary examination of the anatomy of the leaf and the wood has also been carried out. In all the material of *O. scortechinii*, including the type of *Ilex nitens*, the leaves are found to be covered on both surfaces with scattered peltate glands, often sunk in slight depressions of the epidermis. Internally the leaves all contain sclerenchymatous idioblasts and the vessels of the wood have simple perforations. On the other hand, material of *I. oppositifolia*, *I. zygophylla* and other species of *Ilex* examined, all possessed leaves without peltate glands and idioblasts and the vessel endings were consistently scalariform.

More recently Heine (Mitt. Bot. Staats. München, vi, 209: 1953) described a fourth opposite leaved *Ilex*, *I. decussata*, also from Mount Kinabalu. The two syntypes of this species, *J. S. Clemens* 28996 & 28986A, have also been examined, and they appear to be an *Olea* although it has not been possible to name them more accurately yet. The flowers, in tight bud on both specimens, are unisexual and male, the leaves have peltate glands on the surface and dense idioblasts within and the vessel endings are simple. In addition it is worth noting that there are only two stamens in the flowers examined, and that the corolla is strongly valvate in contradiction to the "valde imbricatis" of the original description, although many of the flowers on both gatherings are galled.

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Osmanthus scortechinii King & Gamble in Journ. As. Soc. Bengal, lxxiv, pt. ii, 265 (1906); Ridley, Fl. Malay Penins. ii, 315 (1923); Nakai in Bot. Mag. Tokyo, xlv, 16 (1930); Green in Notes R.B.G. Edinb. xxii, 473 (1958).

Syn.: *Osmanthus scortechinii* var. *oblonga* King & Gamble, l.c.; Ridley l.c.

Olea capitellata Ridley in Journ. Linn. Soc. Lond. xxxviii, 317 (1908); Ridley, Fl. Malay Penins. ii, 319 (1923); Green in Notes R.B.G. Edinb. xxii, 455 (1958).

Ilex nitens Ridley in Kew Bull. 1926, 471; Heine in Mitt. Bot. Staats. München, vi, 210 (1953).

Osmanthus sumatranus P. S. Green in Notes R.B.G. Edinb. xxii, 475 (1958).

Evergreen tree or shrub 1–18 m. high. Young shoots minutely puberulous or glabrous. Leaves punctate, glabrous or very minutely puberulous at least when young and towards the base of the midrib above; petiole 0.5–2 cm. long, base slightly thickened, minutely puberulous especially above or glabrous; lamina thickish, coriaceous or slightly coriaceous, elliptic to broadly elliptic, occasionally narrow elliptic or oblanceolate (2.5–)5–10 (–13) cm. long by (1.5–)3–4 (–5.5) cm. broad; margins slightly thickened, entire, often slightly recurved; apex rounded, obtuse to acute or acuminate, occasionally almost apiculate with a more or less reflexed tip about 1 mm. long, tip blunt; base angustate to almost rounded, decurrent into the petiole; venation obscure, primary veins only visible, impressed above, raised below, (4–)5–6 (–7) pairs per side. Inflorescence axillary, compact panicle, 6–12 mm. long to 20 mm. and thickened a little in fruit, (5–)8–10-flowered, puberulous, very sparsely so or nearly glabrous; basal pair of bracts thick, ovate, bluntly acute, slightly keeled, minutely and scattered puberulous or nearly glabrous, margin ciliate with slightly larger and coarser hairs, 1–2.5 mm. long, second and subsequent pairs slightly larger and thinner, soon more or less deciduous. Flowers hermaphrodite, “yellow”, “cream-white” or “greenish-white”, pedicels 1–3 mm. long. Calyx minutely puberulous, especially towards the margins and apex of the lobes, or glabrous, 1.5–3 mm. long, lobes 4, oblong to ovate-rounded, irregular in shape and length, 0.75–2.5 mm. long, irregularly erose or coarsely ciliate. Corolla tube 2–2.5 mm. long, lobes 4 truncate-rounded, glabrous or very sparsely puberulent and ciliate, 1.25 to a little over 2 mm. long. Stamens 2 or 4; filaments 0.5–2 mm. long, attached near the top of the corolla tube; anthers 0.4–0.8 mm. long, rounded, without or rarely with a very small terminal appendage; pollen (21–)22–23 (–24) μ in diameter. Ovary with or without peltate scales, 2–5 mm. long, including a style 1–4 mm. long with a small capitate slightly bilobed stigma. Drupe ellipsoidal (7–)8–15 mm. long by (5–)6–12 mm. broad (smaller measurements immature?), style base more or less persistent, endocarp thin crustaceous.

MALAY PENINSULA. Perak: Taipeng, *Scortechini* 414 (lecto. K, isolecto. SING); Larut, 1200–1300 m., dense jungle, top of mountains, Dec. 1882, *King's Collector* (Kunstler) 3663 (holo. *O. scortechinii* var. *oblonga* CAL, iso. P); Top of Gunong Ejou, 1350–1400 m., Dec. 1884, *King's Collector* (Kunstler) 6978 (BM, E, FI, K); Taipeng, Aug. 1885, *L. Wray Jr.* 682 (K). Selangor: Gunong Mengkuang, 1500 m., 20 Jan. 1913, *H. C. Robinson* s.n. (K, SING). Pahang: Gunong Tahan, \pm 1500–1800 m., 8 July 1905, *L. Wray & H. C. Robinson* 5489 (holo. *Olea capitellata* BM, iso. SING), 1100 m., 29 May 1905, *L. Wray & H. C. Robinson* 5320 (K), above 1500 m., July 1911, *H. N. Ridley* 16038 (BM, K, SING), 1650–2150 m., 12 June 1922, *Md. Haniff & Md. Nur*, *S'pore Fld. No.* 7919 (SING), \pm 1800 m., 1 Sept. 1928, *R. E. Holttum*, *S'pore Fld. No.* 20724 (BM, SING); ridge above Skeats Camp, above 1500 m., July 1911, *N. H. Ridley* 16256 (K, SING); Gunong Benom, 1500 m., 3 Aug. 1925, *F.M.S. Mus. Coll.* s.n. (K) and c. 1800 m., 7 Aug. 1925, *F.M.S. Mus. Coll.* s.n. (holo. *Ilex nitens* K). Kuatan, Gunong Tapis, c. 1400 m., 14 June 1934, *C. F. Symington & Kiah*, *S'pore Fld. No.* 28874 (SING). Johore: Gunong Belumut, 900 m., probably not abundant, 26 May 1923, *R. E. Holttum*, *S'pore Fld. No.* 10732 (BM, K, SING). Trengganu: Gunong Padang, 1200 m., June 1937, *L. Moysey & Kiah*, *S'pore Fld. No.* 31100 (SING) and 1100 m., June 1937, *L. Moysey & Kiah*, *S'pore Fld. No.* 31834 (K, SING).

SUMATRA. Northern slopes of Mt. Sago, Pajakumbuh, 2000 m., summit regions, mossy forest, 29 June 1955, *W. Meijer* 3621 (holo. *Osmanthus sumatranus* SING, iso. L). Res. Atjeh, Gajolanden, from bivouac "Halfweg" to bivouac summit, Goh. Lemboeh, 2600 m., ridge scrub, 18 Feb. 1937, *C. G. G. J. van Steenis* 9033 (L), *ibid.*, forest ridge, 1800 m., 23 Feb. 1937, *C. G. G. J. van Steenis* 9150 (L).